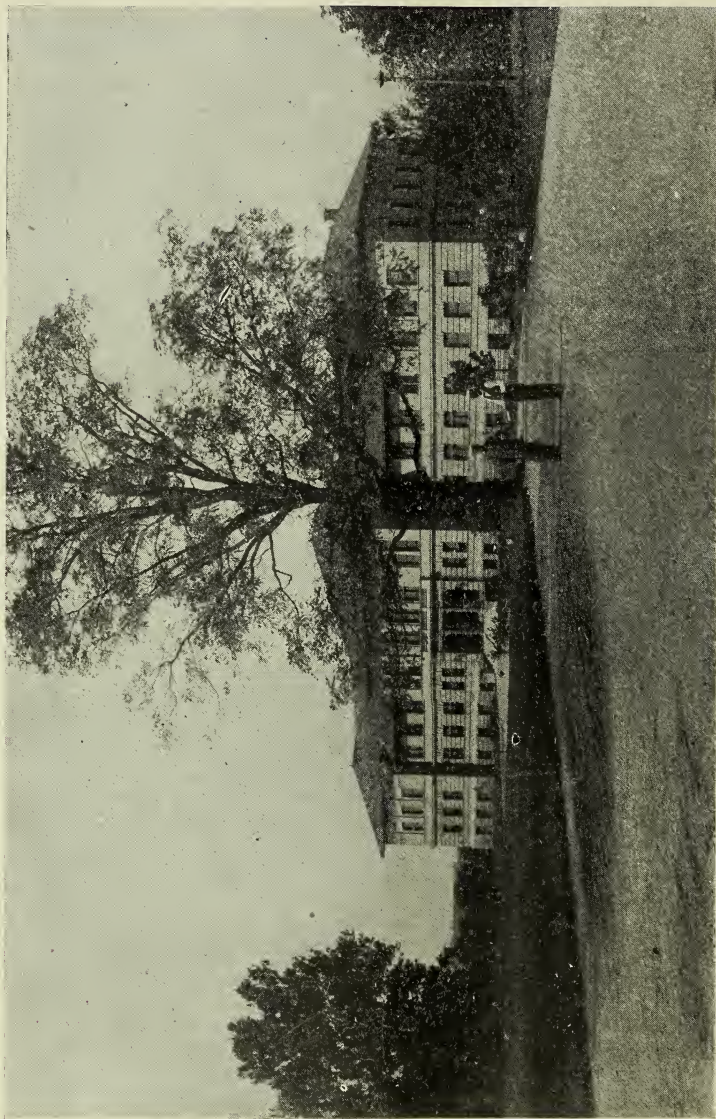


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CONTENTS

Editorial Chat.....	113
A Farmers' Literary Club.....	115
A New Idea in Rural School Agriculture.....	116
Meeting of Ohio Dairymen's Association.....	117
Winona Agricultural and Technical Institute.....	118
Columbus Horticultural Society.....	119
How to Make the Farm Attractive to the Educated.....	119
F. D. Coburn.....	121
Testing for Soil Acidity.....	121
Cattle Feeding at the Missouri Agricultural College.....	122
Secondary Courses in Agriculture.....	122
A New Team for University Farm.....	125
A Short Course in Corn and Stock Judging.....	125
The Ohio Experiment Station....	126
Protecting Orange Groves.....	128
College News.....	129
General Agricultural News.....	129
Lice on Cattle.....	132
Agricultural Chemicals and Fertilizers.....	132

EDITORIAL CHAT.

The introduction of a bill into the national congress by Representative Tawney asking for an appropriation of \$100,000 to be devoted to an exhibit of Agricultural College and Experiment Station work at the Louisiana Purchase Exposition is of much interest to agricultural educators throughout the country. This bill is the result of a resolution adopted by the committee in charge of this work at its last meeting, when it was decided to ask congress for the necessary amount of money to properly conduct such an exhibit. It is proposed that this exhibit shall be entirely one illustrative of methods and of important features of work and that it shall deal only in small part with products. It is a feature distinctly new and one which will be of great value if properly carried out. It is earnestly hoped, therefore, that congress will see fit to pass the measure. The proper congressional committee has authorized a favorable report on the bill, which will be incorporated as one of the appropriation items in the sundry civil service appropriation bill before the latter reaches the house. It

is believed that the bill will pass, as the project has met with decided favor among congressmen. No definite plan for the exhibit has as yet been made, for obvious reasons, but the committee has considered the matter in sufficient detail to be able to get out a working plan in a short time if the appropriation is granted. If this exhibit can be made a success it will undoubtedly be the basis for future work of this nature and cannot but result in a vast amount of good to these institutions.

It will be a feature strikingly new and original and one entirely in accord with the advanced methods employed by our present day colleges and stations.

The introduction of agriculture into our secondary schools is a subject that is at present attracting wide attention among educators, and several states have schools in which the plan is being tried. The plan appears perfectly feasible and there is an undoubted demand for this kind of work. The University is in receipt of 5000 copies of Circular 49 of the Office of Experiment Stations on "Secondary Courses in Agriculture," which will be mailed to all prominent educators throughout the state. The circular is an extract from the seventh report of the committee on methods of teaching agriculture and gives in concise form the present views and conditions existing regarding this phase of agricultural education. An extract from this report is given elsewhere in this issue.

This plan of secondary agricultural education promises much, and unless indications are very deceiving, it is destined to be one of the most important means of getting proper agricultural training to the farmer. Our colleges are doing a great work, but they are not reaching far enough, and some plan to

come more closely in touch with the farmer is needed. Correspondence courses do this in a rather unsatisfactory way, but the introduction of such instruction into secondary and rural schools would be much more effective. Not so effective as the correspondence work in reaching the older class of farmers probably, but the young men and women, the boys and girls who are attending our schools and who are the ones in which we should be interested, are the ones which will be benefited most. The time is rapidly ripening for such methods to be put into practice, and it is hoped that our own state will not be slow in seeing her opportunities and duties in this line of work.

The following letter received recently is of interest:

Gentlemen:

I have just read your editorial on the work accomplished by the Agricultural Students' Union, and was especially interested in what you had to say regarding the proposed organization of a course of instruction in agriculture by correspondence. I sincerely hope those at the head of this movement will be enabled to carry it through, for I feel that there are many young men who are situated as I myself am, desirous of getting an agricultural education, and who, owing to circumstances, cannot attend the University. If you can spare the space in your magazine, I hope you will continue to agitate this subject until some definite steps are taken in the organization of this correspondence course."

The importance of this letter lies in the fact that there is evidently a demand for a more direct method of reaching the farmer than that in which the college is at present engaged. It was this belief that there was a demand for this sort of

thing that prompted the instigation of the plan at the recent meeting of the Student Union. The College of Agriculture is at present doing all that it can under existing circumstances, and the plans which it is working out will, in time, be productive of a vast amount of good, but time is the most important element in this steady and soundly rooted development. Meantime something ought to be done of direct benefit to the farmers and it is believed that the Agricultural Students' Union can legitimately take hold of this work. Professor Vivian is chairman of the committee appointed to devise a plan for this work and he should be glad to receive communications from all old students or others who are interested in the movement with opinions as to its desirability and suggestions which may be considered in the final report. As mentioned elsewhere in this issue the University of Minnesota is taking up work similar to this through its college publication, and although this same plan may not be desirable here, there is evidently a field for good work along this line in our own state.

Mention was omitted in our last issue of the appointment of C. G. Williams as agriculturist of the Experiment Station to take the place of the late J. Fremont Hickman. Mr. Williams is widely known throughout the state as an institute lecturer and as a practical farmer and is admirably fitted for the important work to which he has been called. A recent change in the duties of the agriculturist made by the Board of Control of the Station is effected by the division of the work whereby the work in animal industry has been separated from the agriculturist, this line of work being conducted by another man. This gives the agriculturist much

more time than formerly and will undoubtedly bring about a much greater efficiency in his work than would otherwise be possible. No one has as yet been appointed to take charge of the work in animal industry.

We extend to the new agriculturist our best wishes for success in his work and trust that he will bear toward the University the same friendly relations as did his predecessor.

We are in receipt of the A. B. C. of Cheese Making, which is a short manual for farm cheese makers by J. H. Monrad, of Winnetka, Ill. The edition is concisely written and well illustrated, and from the fact that this is the fourth edition, it appears to have filled a need in dairy literature.

A Farmers' Literary Club.

The Farm Students' Review of the University of Minnesota has recently undertaken the work of inducing the agriculturists of the state to organize reading circles to be conducted similarly to the Chautauqua Reading Circles, which in recent years have been such an important factor in inspiring people, to whom higher institutions of education have not been accessible. This monthly publication is owned and operated by the Alumni Association of the Minnesota School of Agriculture, and its contributors are almost entirely students, graduates and professors of that institution.

The plan of this course can best be seen by quoting from Review, the steps leading up to its first lesson. The December issue contained the following:

"For over a year the Farm Students' Review board has had under consideration the proposition of starting a farmers' reading course similar to the Chautauqua Reading Circles. The idea is to

have a competent authorized board select a regular course of study consisting of say, three years' work of six months each. Each year's work to consist of three or four subjects especially pertaining to agriculture, and the Farm Students' Review to be used as a sort of a Chautauqua magazine to communicate between the teacher and pupil. Those in the country desiring to form such circles to consist of from six to ten members would meet, duly organize, send their names in to the main office, purchase the books for the year's work and begin the lessons as assigned and taught through the Farm Students' Review. The great idea as is found in the Chautauqua work is to provide a systematic course, as well as a systematic method of reading.

"The Review will be greatly pleased to hear from anyone who is interested in the establishment of such a course of agricultural home study throughout the state of Minnesota."

The January issue stated that the offer had been accepted by many and stated that "the movement is progressing nicely and the board, which is charged with the preparation of a course of study is nearly completed. The idea is a broad one and we shall move cautiously so as to make but few mistakes. It will take time to arrange the best suitable course and find books that best treat the subjects. We shall therefore not be able to give a full outline of the courses to be pursued until months later. Everything will be ready for the regular course early in the summer, and we hope to have at least fifty clubs formed and working by October, 1903. In the meantime, to meet the demands already made upon us, we shall take up a short course beginning February 1 and continuing until May 30, embracing sixteen complete lessons.

"Professor Samuel B. Green will teach a class in vegetable gardening and Professor Harry Snyder will teach a class in soils and fertilizers. If you are interested, join the classes by forming a club of five or more members, and begin studying with the first lesson. Of course individuals can do good work alone, but the best results are obtained where a club is organized and the individuals meet once a week at the different homes. The lessons require one hour's reading a day, this to be done carefully and thoughtfully before the club meets. The directions and explanations given by the instructors through The Review are of the greatest help and should be thoroughly noted. In order to take up the work, it will be necessary to purchase the text-books used and to subscribe for The Farm Students' Review, which make up the total cost."

The first lessons appeared in the February number, as promised. Professors Snyder and Green offered several valuable suggestions for obtaining the greatest possible results out of a course of home study such as this. They are carrying on this work by making assignments in the text-books, and supplementing the text by clearing up difficult points. The students are strongly urged at every opportunity to apply the points gained, to their own farm, noting the application of each principle to their own conditions, thus fixing it firmly in their minds. C. A. McC.

A New Idea in Rural School Agriculture.

A novel idea in agricultural education is one just being put into practice in a country district near Knoxville, Tenn. Several country schools have been consolidated and ten acres of land purchased for a demonstration farm, parts of which will be devoted to ornamental

shrubs, to an experimental orchard, to a vegetable garden, a fruit garden, forest and ornamental trees, and a part will be used for farm crops, in illustrating methods of tillage, rotation of crops, fertilizing, etc.

Aside from the school rooms devoted to ordinary common school work, there will be some equipment for the teaching of woodworking and other work of value to farmers, and it is expected to have a room for teaching domestic science in a practical way. The plan is being worked out by President Dabney, of the University of Tennessee, and the work will be given by R. W. Clark and wife, of the University of Minnesota, Mr. Clark taking the work in agriculture, and Mrs. Clark that in domestic science.

The general plan of the work is good and suggests the sentiment that is arising regarding the need for agricultural instruction in every state. If the scheme proves successful, which it undoubtedly will, if for no other reason than the mere consolidation of the schools, it will be an example for many schools to follow with profit.

Meeting of Ohio Dairymen's Association.

The ninth annual meeting of the Ohio Dairymen's Association was held in Townshend Hall, February 12 and 13. The meeting was the largest and by far the most enthusiastic gathering of the sort that has ever been held, and judging from the interest manifest the dairymen of the state are to expect a great future for their business.

The first session convened at 10 o'clock, Thursday, February 12. Owing to the illness of Governor Nash, who was expected to give the address of welcome, Secretary of State Laylin was present and in a most pleasing and

appropriate address welcomed the dairymen to the city. A response was given by L. P. Bailey, president of the association, in which he thanked the secretary for his words of welcome and urged upon the members present some of the important needs of the dairy interests of Ohio. Following this was an address by Professor G. L. McKay, of the Iowa Agricultural College, on "Buttermaking as a Profession," in which he emphasized the fact that men of a high grade of intelligence are necessary for the best production of butter.

The afternoon session was addressed by A. Slaughter, on "Rambling Thoughts," and an exhibition of scoring butter was given by Professor McKay. The butter was brought into the assembly hall, sampled and the samples passed about the audience, while Professor McKay scored the butter and gave his reasons for classing it as he did. The demonstration was very interesting and instructive.

The evening session was held in the University chapel and was addressed by Professor McKay on "Dairying at Home and Abroad," the lecture being illustrated by stereopticon views. He showed many views of interest, among others several of the large Western creameries and cheese factories of the United States, thus giving the dairymen an idea of the concerns with which they must compete. He also brought out well the possibilities of the dairy business, especially in the United States. The forenoon session on Friday was a very interesting one and was very well attended. Professor L. L. Van Slyke, of the New York Experiment Station, gave an address on "Investigations in Cheese Making," which was most interesting and instructive and showed plainly the fraud of the 20 per cent. standard of Ohio cheese. This was followed by

an address by Professor Alfred Vivian, of the University, on the subject of "Curing Cheese at Low Temperature in Wisconsin." Professor Vivian gave a history of the investigations in cheese curing in cold storage with much of interest and value in this method. He exhibited samples of milk which had been subjected to the action of various enzymes, some of the samples having been almost completely digested by their action.

The afternoon session was addressed by F. W. Oshman on the "Production and Care of Milk," also by Professor Van Slyke on "The Relative Value of Milk for Butter and Cheese by the Babcock Test," and by the dairy and food commissioner-elect, Mr. Horace Ankeney. All three addresses were full of interest.

Each session was most interesting and standing room only was available at every one. The exhibits of dairy machinery and utensils was the most elaborate ever given, all available space in the large museum room at the north end of Townshend Hall being taken. In the exhibit of dairy products B. B. Herrick, of Wellington, won first prize for full cream cheddar cheese, while the first prize on creamery butter was won by J. C. Hall, of Wilmington.

The first prize for farm dairy butter was won by Mrs. Elliott, of Reynoldsburg.

Considerable business of importance was transacted during the meeting. It was voted to hold a three days' session next year, devoting two half days to an industrial exhibit. It was also voted to expend a part of the funds of the association during the coming year in instructional work among the various creameries and cheese factories of the state. B. B. Herrick and D. A. Crowner were named as instructors, whose duty it will be to visit factories and

creameries upon request and spend a day or more in instructional work, their expenses being paid by the creamery or factory and a per diem being allowed them by the association. An appropriation was also made for holding a series of dairy meetings, as was done last year. The carrying out of these measures, however, is in the hands of the executive committee, which will proceed along such lines as it sees fit.

The following officers were elected for the ensuing year: President, L. P. Bailey; vice president, C. G. Williams; secretary-treasurer, D. A. Crowner.

Winona Agricultural and Technical Institute.

There may be said to be two kinds of agricultural educational institutions in the United States to-day, one training young men in the science of agriculture, the other emphasizing the practical side of agriculture. Most of the agricultural schools of the country belong to the former class, but within the last few years there seems to have arisen a demand for practical instruction and experience in agriculture and to meet this demand several schools have been established. The Winona Agricultural and Technical Institute is a school of this character and is located at Winona Lake, Indiana. It is two miles east of Warsaw, Indiana, 110 east of Chicago and 120 miles north of Indianapolis. The Winona Assembly and Summer School now owns more than 400 acres of land with an option on 200 acres more, divided into beautifully shaded and watered parks, and farms, forests, etc. These entire grounds are tendered to this new school for nine months in the year. It has been decided to erect a memorial building on the campus to cost not less than \$50,000, this amount to be raised by donations and by the sale

of 50 acres of ground which has been donated for this purpose by the Winona Assembly. This is to be a school for boys of 14 years and upwards, and is to be unique in the field of education. It is not to duplicate school or college work but is to train young men for practical agriculture. The course of study embraces six years of work, two in the preparatory department and four in the academic. The studies are arranged so as to give boys in such a school the best possible all round training.

To enter the academic department the student must be well prepared in arithmetic, English grammar and United States history. The faculty includes teachers in all English branches, agriculture, manual training and the English Bible. Each boy is required to do manual labor for at least three hours each day and \$100, together with what a boy receives for his work, pays his expenses for one year. The school started September last and the boys in attendance this year came from eleven different states and three foreign countries. There are about ninety boys in the school this year and a large number were turned away on account of lack of room. It is the avowed aim of the school not only to teach the English Bible, but to surround the student with an evangelical Christian environment.

It is a work of philanthropy and must be supported by voluntary gifts of its friends. The school started without a permanent endowment and it is their plan to seek subscriptions covering a term of five years.

A number of scholarships have already been endowed. The instruction in agriculture is given in the following subjects: Soil and crops, farm buildings, breeds of live stock, history of agriculture, dairying, agricultural engineering, feeds and feeding, entomology,

economic botany, horticulture, agricultural physics and chemistry. Besides this instruction is given in literature, mathematics, history, science, manual training, language, the Bible, vocal music and physical culture.

C. B. H.

Columbus Horticultural Society.

The regular monthly meeting of the Columbus Horticultural Society was held Saturday, February 14, in Horticultural Hall. The meeting was addressed by Professor W. J. Green, of the Experiment Station, on the subject, "Do We Need More Varieties of Fruit?" He emphasized the fact that so far we have been simply working on the production of new varieties with little reference to their adaptabilities and affirmed that hereafter more attention must be paid to securing varieties which shall be adapted to given conditions of soil and climate, which shall be free from disease, and which are more resistant to insect pests, etc. The paper was a very interesting one and the meeting was on the whole very successful.

How to Make the Farm Attractive to the Educated.

Under the above title a recent article by Professor S. A. Forbes, of the University of Illinois, discusses the subject of "The Educated Farmer and His Farm" in a manner which indicates a thorough mastery of the matter, and a point of view wholly in accord with our growing system of agricultural education. He states that while there are people who could not adapt themselves to any farm, and farms to which no education could reconcile anyone, yet it is "undoubtedly possible to increase the attractiveness of the average farm to the average man by the improvement of one and the education of the other."

Furthermore he says that "the improvement of the farm and the education of the farmer are not two topics, but only one; for if the farmer be adapted by education to farm life, the adaptation of the farm to himself will naturally follow."

In the first place we must recognize the fact that agriculture has become a specialized calling, not only in itself but in its several branches and that a certain native fitness for it is no less necessary than for other vocations. Again, farming is now a form of business making practical application of a great group of sciences and the rapidity of its progress, the complication of its processes, the expansion of its outlook, the relative security of its results will surprise anyone who, for the first time, becomes acquainted with it in the higher forms of its development. "The education in high school and college which will really fit the young farmer to choose intelligently his field of operations and to get the most out of it and out of himself, is a very different thing from the form of higher education not long since dominant, planned as that was with primary reference to the old-time pulpit and the court of law."

No one will enter upon a calling in which he feels he is doomed to fail. To make the farm attractive to the educated, therefore, we must first educate for the farm; that is we must provide instruction in those subjects which enter most largely and most deeply into the farmer's life and work.

Regarding the education necessary for the greatest success and the most thorough enjoyment, the author declares that the farmer should understand the principles of business, he must have a working knowledge of the physical and natural sciences, both in their pure forms and in their applications, and he must

make a thorough and critical study of the operations and materials of the modern farm. These subjects worked out to a proper degree will require two-thirds or three-fourths of a four-year college course, while the remainder is left to improve the preparation for the broader life of the individual, the home, the neighborhood and the state. "No one who knows the studies mentioned above, and who has seen a few of the ready, clean-cut, wholesome and attractive fellows who often come out from a course of study made up almost wholly from them, can doubt that such a course goes a great part of the way toward preparing for life at its broadest and its best. Enlarge its base in political, social and industrial history, strengthen it with civic studies, and adorn it with æsthetic subjects, remembering further that life itself is, after all, the best preparation for a broader and a higher life, and then observe the educated farmer as he begins his work upon his farm."

Having properly prepared himself, the farmer begins at once to fit the farm to himself as a place of business and as a home and thus to make it attractive to himself and his family. He will do his best to make of it a perfect instrument of production, he will study it carefully that he may know its peculiarities, its weak and strong points; he will choose his stock with skill and judgment, he will weed out his herds according to a certain standard. He will study markets, probabilities, demands and sources of supply, and will keep an open mind, but a calculating judgment, for all new ideas. In short, he will improve his plant and develop his business, like any other business man.

Our countrymen thus properly trained for country life will, if he is the right kind of a man to begin with, coöperate or lead in all that tends to the

improvement of his material, social, political, educational, intellectual environment, thus helping to develop and maintain a kind of rural life which adds to the charms of the country some of the best of those of the towns. While in the city where we have a social group so large and so heterogeneous that one's individuality may be submerged and his power of initiative lost, "the individual is nowhere so efficient, socially and politically, as in a high grade country community, and one intelligent, right-minded, tactful and reasonably persevering man can accomplish almost any good thing which a rational ambition might desire. * * * If he shows friendly feeling and good judgment, if he is public-spirited, business-like and economical, his community will back him up in any reasonable public enterprise, and there are no mountains to move as a preliminary. In such a situation, one competent for country life and predisposed to its enjoyment will feel himself fortunately placed; and however far his actual situation may fall short of that here presupposed, it is for him to do his best to realize some such ideal on his own place and in his own neighborhood. The gradual improvement of his farm and of its equipment, the gradual development of his home and the betterment of his community, together with the incidental pleasures inseparable from rural life, will make the right kind of a farm, rightly situated, attractive to the right kind of a man rightly educated; and of these several items the most important is the man and the next is his education. With these rightly chosen it is a very poor farm in a very poor community which cannot be made a wholesome and a satisfying home and an admirable place in which to rear a useful and a happy family."

F. D. Coburn.

F. D. Coburn, Secretary of the Kansas State Board of Agriculture, has been appointed chief of the live stock division at the Louisiana Purchase Exposition and has assumed his duties. The Kansas Board of Agriculture, with which he has become so favorably known, has given him a two years' leave of absence for this work. Mr. Coburn is a man eminently fitted, both by nature and experience, for the work which will devolve upon a man in such a position, and it is generally conceded that the board of managers of the exposition have been wise in its choice.

Mr. Coburn's live stock literature is widely known throughout the country and his interest in live stock matters is the deepest. He is a man of original ideas, of untiring energy, and of peculiar power in dealing with men, so that his management of this important feature of the exposition is taken as a guarantee of its success.

Testing for Soil Acidity.

The Division of Soils of the Agricultural Students' Union wishes to call the attention of the readers of the *Student* that the work done last year on soil acidity indicated that there was a great deal more acid soil in the state than had been suspected and from this fact it was determined to continue the work the coming year, since the results obtained last year were not entirely conclusive. If one acre in every fifty in the state is acid as the results indicate we can readily account for a great many of the failures in clover which are reported. As is well known, clover will not do well on a soil that shows even a slight degree of acidity, probably because of the injury to the bacteria, and it therefore is to the interest of every farmer who has

had any trouble getting a stand of clover to know positively that his land contains no acid.

The Division of Soils is prepared to send material for the tests to all who desire it, providing they report the results of their work. It would aid in the work greatly if all readers of this magazine should make these simple tests, and as it requires but little time to gain a fair idea of the condition of the soil in any community, it is hoped that as many as can will write for material and make the tests. Such persons would not only be gaining useful information regarding the soils of their own farms and localities, but would be aiding in great measure the work of the Agricultural Students' Union.

Cattle Feeding at the Missouri Agricultural College.

The following is of interest in showing the possibilities in cattle feeding at our Agricultural Colleges and Experiment Stations:

A carload of two-year-old high grade steers fed by the Agricultural Experiment Station at the University of Missouri, averaging 1466 pounds, sold in Chicago recently at \$6.85, which was more than one dollar above the top of the market for the day of the sale, and is the record price for cattle in any market this year.

These steers were purchased in the vicinity of Columbia at a cost of \$4.10, for the feeding experiments conducted at the station, in which the feeding value of cottonseed meal, linseed meal and bran, in combination with corn, was compared with corn alone, on bluegrass pasture. They have been on full feed since July 1. These cattle were also used by the students in the stock-judging exercises required of the students in the Agricultural College, and were

used to impress upon these young men the importance of handling only high grade stock.

Four of the best steers in the original bunch purchased by the station were taken out last spring to go with a load of show cattle that won at the International Fat Stock Show at Chicago this fall. These steers were considered by all authorities to be the best and to be carrying the finest finish of any animals that have been on the market since the Fat Stock Show, and were considered by some to have been capable of winning in that contest.

The station has now eighty high grade calves with which it is comparing the influence of age upon the cost of beef. One-third of these calves will be marketed next fall as yearlings, another third the following fall as two-year-olds, and the third bunch will be carried until they are three years old a careful record being kept of all the food consumed during the progress of the experiment. The United States government is co-operating with the station in conducting this experiment and has a special officer located here to collect data and report the results to the government.

It is of interest to note in this connection that Merritt Harper, O. S. U., '01, is the "special officer" mentioned above.

Secondary Courses in Agriculture.

(Extract from the Seventh Report of the Committee on Methods of Teaching Agriculture, American Association of Agricultural Colleges and Experiment Stations.)

Interest in matters relating to instruction in agriculture of a grade lower than that properly included in the college course has been growing rapidly in different parts of the United States. This is a matter vitally connected with

the further development of our agricultural colleges. If the movement is rightly guided it may also widely improve the opportunities for agricultural education which will be made available to the young people on our farms. Your committee has therefore thought it wise that it should give some attention to this phase of agricultural education, and should at least call the attention of this association to the pressing need for the establishment of institutions and courses for secondary instruction in agriculture.

Broadly speaking, the system of public education in the United States has now reached a stage where the secondary schools and courses are being much more clearly differentiated from the institutions and courses of lower and higher grade. Standards of education are being established which more clearly fix the boundaries of elementary education through a system of graded common schools. Next above this we recognize the secondary or high schools. These are no longer regarded as essentially or chiefly preparatory schools for colleges. On the other hand, their courses are being continually broadened with reference to the varying needs of students who are to pass from them directly into the various pursuits and industries of our American communities.

The high schools in our larger towns and cities are being especially developed with reference to different forms of commercial business and manual arts. With the development of the high schools the work of the colleges is being more and more relegated to grades of instruction above those of the high school and for this reason the requirements for entrance to the colleges are being raised and the preparatory work which many of the colleges have hither-

to done is either being cut off entirely from these institutions or is being organized in a way which clearly differentiates it from the college work proper.

In order to bring agricultural instruction in line with the prevailing movement regarding secondary schools and courses, several changes in our existing school system are required.

The college courses in agriculture should be made of real college grade, as recommended in previous reports of this committee and in a report of the committee of this association on entrance requirements. This would require that those agricultural colleges now receiving students directly from the common schools should either raise their requirements for admission and abolish their courses of lower grade, or else should raise their requirements for the bachelor's degree and differentiate the preparatory or secondary courses which they offer from those of college grade. A movement in these directions is already in progress and should be encouraged to proceed further.

Experience at the Minnesota Agricultural College and elsewhere seems to indicate that it is desirable that the secondary instruction given in connection with our agricultural colleges should be more formally organized as a thing separate from the college courses in agriculture. In this way agricultural high schools may be established in connection with the colleges, which will offer students an opportunity to pass through a secondary course complete in itself, thus giving them a large part of the general education ordinarily acquired in the high school, together with some definite training in agricultural subjects.

It is believed that this is a better plan than to institute courses which are

merely preparatory to the college courses given in the same institution. Whether such secondary courses should be indefinitely continued in connection with our agricultural colleges is indeed problematical, but as many of our colleges are now organized it would not at present be practicable to wholly cut off the secondary instruction. It will, however, be a great gain to have the secondary instruction in agriculture, as in other subjects, clearly differentiated from the college courses in the mind of both the students and the public. And under present conditions many of our agricultural colleges may in this way contribute to the movement for the definite organization of secondary instruction in agriculture in the United States. But it is clear that whatever aid existing agricultural colleges may give in this direction, it will be desirable to establish and support special high schools in which instruction in agriculture shall be given. The movement in this direction has already begun and undoubtedly will continue and increase. * * *

In addition to provisions for instruction in agriculture in connection with the colleges and in special agricultural high schools, the teaching of agriculture should be introduced into the public high schools in or near the rural communities. There are many villages and cities in the United States which are dependent on the farms surrounding them for their commercial prosperity, if not for their very existence. The high schools maintained in these places draw their students largely from the farms. There is good reason why communities of this kind should seek through their schools to promote the interests of the industry to which they owe so much. They should at least coöperate with the surrounding rural communities to secure for the farmers' children tech-

nical education parallel to the education in commercial business and mechanic arts which many of the city high schools are now offering to their students.

As previously stated, the high school system of the United States has been rapidly developed in the last few years in the direction of broadening the courses in natural science and industrial arts and in the provision for numerous elective courses in these and other subjects. While it continues to supply college preparatory courses for the limited number of students intending to pursue their school careers beyond the high school, its chief business is to educate the nine out of every ten of its students who are to step from its halls into active life. In our largest and wealthiest cities this change of aim of the high school has led to the establishment not only of numerous courses in the classics, modern languages, natural sciences, mathematics, history and political economy, but also of separate high schools with elaborate courses in business forms and mechanic arts. The smaller cities are striving to follow in the same path as far as their means will permit.

Agriculture has thus far been almost entirely neglected in the high school programs, and it is high time that the friends of agricultural education should make a systematic effort to have the claims of this fundamental industry acknowledged and satisfied in the curricula of the public high schools. Since successful agriculture is essential to the prosperity and well-being of urban as well as rural communities, there should be coöperation between country districts, villages, cities and the states to provide the means for the maintenance of agricultural courses in the high schools. As a practical measure it is believed that such courses may be added

to those already existing in many high schools by the addition of a single teacher, who should be an agricultural college graduate, to the teaching force already supplied. The expense of maintaining this teacher and his equipment may properly be shared by the state, the village, or city maintaining the high school and the country district from which the pupils from the farms are drawn to this school. The state may properly aid this movement by offering a stated sum annually to high schools maintaining agricultural courses. Already many small townships are paying the tuition of pupils attending high schools in neighboring townships, and this system should be extended with the proviso that such tuition fees paid for students desiring agricultural courses should be devoted to the maintenance of agricultural courses. The balance necessary to maintain these courses will, it is believed, be cheerfully paid by the villages or cities maintaining the high schools as soon as they realize that such expenditure is in the nature of an investment, the returns from which, in the way of better and more abundant agricultural products will be certain and remunerative.

A New Team for the University Farm.

A new team was recently purchased for the University farm by Professor Plumb. Considerable time and effort was spent in getting what the Professor thinks is a good team and one typical of the breed which the horses represent. The latter feature was especially important because of the increased amount of work that is being given in animal industry and the difficulty of readily securing animals suited for class demonstration and judging purposes. The horses are handsome black Percheron geldings, four years old the com-

ing May, and weigh 1720 pounds each. They are perfectly matched, about sixteen and one-half hands high and are very high-class animals. They were purchased of W. G. Hershey, of Ashley, Ohio, and are Ohio bred.

A Short Course in Corn and Stock Judging.

During the first two weeks of January the Iowa School of Agriculture gave a short course in stock and corn judging. The attendance far exceeded the expectations of the college faculty, but they were finally able to properly attend to the wants of all students. Not only were there students from all parts of Iowa, but from the adjoining states as well, and also from Virginia, Ohio, Indiana, Mexico and Canada. More than 370 persons were enrolled for the classwork, which shows to what extent the efforts of the college were appreciated by those engaged in practical agriculture and unable to attend a longer course of study in an agricultural college. It should be the aim of every practical farmer to be a good judge of the live stock he raises and the corn crops he produces, especially of those living in the corn belt.

The school came at that period of the year when farm work is the least pressing and those desiring to do so could avail themselves of the opportunity of such study.

In order to aid the student, or prospective student, in such work as this, a correspondence course in agriculture along the lines of breeds of live stock and crop production would increase the efficiency of the student in the practical work of the short winter term. Such study will increase the farmer's appreciation of his position and give him a clearer knowledge of his farm work, and will enable him to work to

a greater advantage with the means at hand.

During this short course not less than four hours per day were given to the study and judging of corn, some of the time being given to lectures by Prof. Holden, of the agronomy department, and Profs. Shammel and Stevenson, of Washington, D. C., on the important phases in judging, breeding and improving the corn crop. Planting and cultivation were also given due emphasis.

Of the daily stock judging periods, those of the first three days were devoted to the study of the horse. Three days each were given to cattle, sheep and swine.

Professor Kennedy had charge of the work in stock judging, assisted by the regular college force of instructors and a number of persons from other places who are specialists in their line of work.

Three hours per day for three days is a short time in which to study more than the mere general characters of the breeds of live stock, but if the student is sufficiently interested he can add to his knowledge thus acquired by studying at his home, either under the direction of a correspondence school or as his own wishes and means will allow. The leading beef and dairy breeds were used in judging, and a slaughtering test, calculated to show the best methods of butchering, and the difference in meat produced from the different market classes of stock, was held. This was personally conducted by Mr. F. M. Mullins, of the Agar Packing Company, of Des Moines, who holds the position of champion butcher of the world. The carcasses were used in the demonstration on Saturday, January 17, when Mr. John Gosling, of Kansas City, addressed the classes and pointed out the dif-

ferences between the carcasses from a retail butcher's standpoint.

The last two periods given to work on corn were taken up in an examination, in which 250 persons were examined, and these papers show that with but few exceptions the students have a clear and definite knowledge of the important points to be considered in corn breeding and improvement. To those that are deemed competent to become corn judges the agronomy department of the college will issue corn judging certificates.

As a direct result of the school, the Iowa Corn Growers' Association was organized, and will hereafter grant the certificates, which will be good for three years. Such study as is here started will not only tend to improve and increase the yield of the principal crop of the Central states, but also to teach the student the kind of an animal that will use the corn to the greatest profit. By increasing the corn crop the number of animals raised and fed may be increased and thus increase the profit for the farmer.

T. W. D.

The Ohio Experiment Station.

It has been only a little over twenty years since the first Agricultural Experiment Station in the United States was organized, and only half a century since the first in the world was founded.

As in much of our scientific research in agriculture, we are indebted to the Germans for the experiment station idea. In a little farm house at Moeckern, in the kingdom of Saxony, a few farmers established the first Experiment Station the world had ever known, and by its organization a new era in agriculture was begun. It was not long before the farmers in other parts of Ger-

many say the good that was being done by this station, and soon others were started.

In the United States the state of Connecticut was the first to take a step in that direction. In 1875 a bill was introduced into the legislature providing for the establishment and maintenance of an Experiment Station. The station was successfully inaugurated in 1876 at Wesleyan University, Middletown, with Prof. W. O. Atwater as director. North Carolina was the next to fall into line, that station being founded in 1877. Then New Jersey, in 1880, and New York in 1881. In April, 1882, the station in Ohio was organized.

The farmers of the state had made demands for a station and Prof. W. R. Lazenby, professor of horticulture at Ohio State University, prepared a bill providing for the establishment of such an Experiment Station. This bill was introduced into the Legislature by Col. J. H. Brigham, then senator from the Thirty-third assembly district, and was passed April 14, 1882. A few days after Governor Foster appointed three members of the Board of Control. They were: W. I. Chamberlain, Nicholas Ohmer and Emmett Mix. These members of the Board of Control were called together April 25 and effected an organization and appointed Prof. Lazenby as director.

The trustees of the Ohio State University having offered the free use of as much land as might be needed for field experiments, the use of laboratories, apparatus, collections, implements, etc., necessary to carry on the appropriate work, the station was located at the University. The headquarters of the station at that time consisted of two apartments in the Chemical building of the University. The larger room was used as a seed laboratory, weighing and

storage room and the other as office and writing room.

The station remained here until Aug. 1, 1892, when it was removed to Wooster. The reason for this removal was partly due to the fact that some of the farmers of the state claimed that the soil in the farm at the University was not a fair representative of the soils of the state and experiments that succeeded there would fail where the soil was not so fertile. So under Director Charles E. Thorne, who is still director, the station was removed to its present site, which consists of a farm of about 500 acres, located near the town of Wooster.

Here the headquarters are located in a handsome stone building costing \$50,000, with ample room for each department. Experiments are carried on in every branch of agriculture, but the Ohio station is noted everywhere for its field experiments and tests plats in fertilizers and variety tests. The station seems to have made especial effort along this line from the very start, so that the results that are now offered have been obtained through several years of experimenting.

The Ohio Experiment Station is one of the best financed stations in the United States, ranking fourth in the amount of income. The total income for the year ending June 30, 1901, was \$50,615.17. Of this amount, \$15,000 was appropriated by the United States and \$13,600 by the state. Besides these regular yearly appropriations, the state legislature makes special appropriations for the investigation of important subjects, as, for example, the prevalence of bovine tuberculosis throughout the state, etc.

At its foundation and up until 1902, the Board of Control consisted of five men, including the director and gover-

nor of the state. But in 1902 this was changed to five outside men selected from different parts of the state.

The present Board of Control is composed of Alva Agee, president, Cheshire; O. E. Bradfute, secretary, Xenia; D. L. Sampson, treasurer, Cincinnati; Hon. Friend Whittlesey, Atwater; D. D. White, Castalia.

Prof. W. J. Green is vice-director and C. G. Williams has been recently appointed agriculturist, owing to the death of J. Fremont Hickman.

Until recently the farm and division of animal industry were in one department and under the supervision of the agriculturist, but lately the two have been separated. As yet no superintendent has been appointed to take charge of the latter work.

That the Experiment Station has benefited the farmer cannot be denied, but what has been done is only a very small part of what it is to do in the future, for we are told that the science of agriculture is yet in its infancy.

T. L. WHEELER.

Protecting Orange Groves.

Protection against freezing has been reduced to a science among the orange growers of Florida, says *Country Life in America*. Trees are now budded low, almost at the surface of the ground or not more than from four to six inches above the surface, so that they may be easily protected from injury by banking with earth. In some cases growers throw a bank of earth around the base of the tree to a height of two and a half to three feet. Wood fires have also been found to afford good protection in case of freezes, and in some groves and nurseries an abundance of wood is placed at regular intervals, ready for firing whenever the temperature falls to a dan-

gerous point. Special pots and cylinders for burning resin have also been devised which are distributed throughout the grove at convenient points, and kept in readiness during the winter so that they may be lighted promptly. The grower who depends upon wood fires and devices for heating must watch the weather with great care. Some growers have thermometers in their groves so connected with an electric bell in their sleeping rooms that when the temperature goes down to the danger point an alarm is sounded that awakens them. Other growers have sought to contrive methods giving continuous protection during the winter. Extensible box tents, and cloth tents that can be easily adjusted, have been devised and are highly recommended by some. The system of covering with slat sheds, such as are used by pineable growers, has also been adopted by some grove men, and a number of such sheds have been erected over orange groves.

Both New York and Pennsylvania are this year working hard to secure large appropriations for their agricultural colleges. New York is making a special effort and is being greatly aided by the agricultural press, more particularly the *Rural New Yorker*, which is coming to the aid of the college in this respect. New York has long needed buildings and equipment for the Agricultural College and judging from the sentiment that seems to be rising, the farmers are going to demand that a sufficient appropriation be made for this purpose.

The Carnegie Institute has granted \$5000 to Professor W. O. Atwater, of Wesleyan University, for investigations regarding the measurement of oxygen in connection with metabolism experiments. An attempt will be made to perfect the respiration calorimeter designed

by Professor Atwater so as to make it much more efficient in studying the nutrition of the animal body.

College News.

Several old students were seen about college during the meeting of the Dairymen's Association.

T. E. Orr, of Beaver, Penn., secretary treasurer of the American Poultry Association, delivered a series of lectures before the agricultural students February 15, 16 and 17, on the breeding and care of domestic fowls. Mr. Orr is a well-known authority on this subject and his lectures were very interesting.

Mr. E. O. Fippin, of the Bureau of Soils, U. S., Department of Agriculture, visited the University recently. Mr. Fippin has spent the greater part of the winter in Florida in the government service and will probably return south soon.

Owing to the prevalence of smallpox in the city, all students were required to be vaccinated and to show certificates to that effect before being allowed to enter classes. There has so far been but one case among the students, but its presence in the city is alarming.

Mr. Charles Krayenbuhl, of Copenhagen, Denmark, a manufacturer of rennet extract, visited the dairy school February 17.

Work in the dairy school is progressing satisfactorily and the men are show-

ing much interest in their work. Numerous calls for trained men in this line have been received.

General Agricultural News.

C. M. Hall, Professor of Geology at North Dakota Agricultural College, died January 23 at Fargo.

R. S. Mackintosh, Assistant Horticulturist of the Minnesota Station, has been appointed Professor of Horticulture at the Alabama Agricultural College.

The Kansas Experiment Station has established a sub-station at Fort Hays and begun operations. The chief objects of the branch station are the testing of plants and methods of culture with special reference to the needs of regions of deficient rainfall.

The School of Practical Agriculture, formerly located at Briarcliff Manor, N. Y., has moved into its new quarters at Poughkeepsie. No buildings have as yet been erected, but two houses in the city have been rented and for the present the school will be quartered in these. As soon as practicable a main building and laboratories will be built at the farm which has been purchased just outside the city. The school will hereafter be known as The School of Practical Agriculture and Horticulture at Poughkeepsie.

John W. Kilmore, who was recently called to fill the position of Agriculturist at the Cornell station, left vacant by the resignation of L. A. Clinton, has entered upon his duties. Mr. Gilmore has been engaged in teaching agriculture in

the Philippine Islands, Hawaii and China previous to the acceptance of this position.

The death is announced of Dr. T. R. Segelcke, Professor of Dairying in the Royal Veterinary and Agricultural College at Copenhagen. He has been generally known as the father of modern dairying in Scandinavia.

A new periodical has just appeared which is known as "The Australian Gardener." It is a monthly of 16 to 18 pages and is devoted mainly to floriculture, vegetable and fruit growing. It is designed for professional, practical and amateur gardeners in Australia, New Zealand, Tasmania and South Africa.

There will be held this year, at Tuskegee, Ala., a summer school for negroes, the object being to reach the leading negro teachers in every part of the south, and not only to help them in their methods, but to give them a knowledge of the methods to be employed in introducing industrial education into the various schools of the south.

The Frisco system will establish an experiment farm of fifty acres near Comanche, in Erath county, Texas, to assist the farmers of the region in raising hogs. Interest in that industry was increased by the establishment of a packing house at Fort Worth, and it is stated that within a radius of 150 miles of that city the sales by hardware merchants of wire for hog fences has increased from 50 to 100 per cent.

Eighty-seven North Carolina counties have taken advantage of the state law by which after \$10 is contributed by private subscription, \$10 is given by the county and the same by the state for the support of rural libraries. In these

counties 408 libraries have been thus established and the number increased by the liberality of various individuals. This is a very exemplary feature of North Carolina's educational development.

The Missouri Agricultural College announces a two weeks' course in poultry farming beginning March 2 and closing March 14, 1903. This work will be given by Mr. T. E. Orr, of Beaver, Pennsylvania, one of the best poultry experts in America and Secretary of the American Poultry Association.

The work will embrace thorough instruction in the breeding, feeding, judging and general management of poultry for profit and pleasure. Special instruction in handling of incubators and brooders and other modern poultry appliances will be given. The number of students admitted to this course will be limited to one hundred.

A suggestion has been made by the American League for Civic Improvement for an exhibit at the Louisiana Purchase Exposition which shall show a model country home with all its possibilities as to sanitary buildings, and its æsthetic surroundings. The plan is a good one and if the exhibit could be properly made would undoubtedly awaken many to a realization of the possibilities of country life.

The importance of the introduction of macaroni wheat into the United States by the Department of Agriculture is not generally recognized. According to the report of the Secretary of Agriculture it is estimated that about 2,000,000 bushels were harvested last season, which, however, will not meet the demand coming from all quarters. Mills are being constructed to grind it and it now has its definite grade like other wheats in the northwestern mar-

kets. It yields from one-third to one-half more than other wheats in the same locality and extends the wheat area farther west, where it was not considered possible to grow wheat because of light rainfall. The macaroni from this wheat is pronounced equal if not superior to the imported product, so that the success of this industry is assured.

According to a statement made by Dr. D. E. Salmon, Chief of the Bureau of Animal Industry, three thousand animals have already been slaughtered in Massachusetts, Rhode Island, Vermont and New Hampshire for foot-and-mouth disease, and the indemnity the government has paid the owners aggregates over \$100,000. Not a single case of the disease has so far been reported from any point outside New England, although a general spread was greatly feared when the disease first appeared. Unless new cases develop it is probable that most of the quarantine restrictions will be removed within ninety days.

Bulletin 10 of the series published by the Glucose Sugar Refining Company gives a summary of feeding experiment carried on by Senator T. S. Chapman, of Illinois, to determine the practicability of a ration much higher in portein than the standard amount of $2\frac{1}{2}$ pounds daily for steers on full feed. The experiment was tried with high grade Short-horn, Hereford and Angus cattle on a Texas range and extended over the 77 days previous to the International Live Stock Exposition of 1902. Buffalo gluten feed was the chief source of protein, supplemented by corn, wheat, bean and roughage, consisting mainly of timothy hay, shredded fodder and straw. The total gain of the entire lot of 20 steers for the above time was nearly 2 pounds daily per steer. The shrinkage in shipping was 20 pound per steer, which

is much less than the average. But perhaps most important of all is the fact that the report of the firm purchasing them, shows that the loss in slaughtering was much less than the average loss.

The experiment seems to prove first, that a ration with high protein content will give the greater gain of the best quality of beef, with the least loss in shipping and killing; second, that some form of the gluten meals furnish one of the cheapest and most satisfactory sources of protein to the average feeder.

The growing of Summatra tobacco under cloth is becoming an extensive industry in the Connecticut Valley: The peculiar conditions of the soil there seem exactly suited to the production of a fine leaf when the climate is controlled by means of the cloth cover. Something over eight hundred acres were thus covered in the valley last season. The frames are placed about nine feet above the ground and the plants grow to almost that height. The leaves are picked one at a time as they become ripe and it is necessary to put them through a very careful system of fermentation to suitably prepare them for market. The high prices the best product brings allows of a large income per acre in spite of the costly cover and careful handling necessary.

During the year ending January 1, 1902, Americans exported \$3,391,940 worth of green apples and \$2,147,660 worth of the dried product. In comparison the following are of interest:

Apples	\$5,539,600
All mowers and reapers.....	8,894,542
All horses	6,086,012
All fertilizers	6,576,810
All furs	5,080,424
All boots and shoes.....	6,470,412
All butter	1,681,723
All cheese	2,109,347
All vegetables	2,312,749

It has been definitely announced that Professor L. H. Bailey, Professor of Horticulture at Cornell University, will be the next dean of the Cornell College of Agriculture to succeed Professor Roberts, who retires at the end of this year. The appointment of Professor Bailey has not been officially ratified by the board of trustees, but it is understood that the matter is as good as settled. Professor Bailey is a graduate of the Michigan Agricultural College and has long been connected with Cornell University as Professor of Horticulture. He is a man of giant intellect, of untiring energy and an indefatigable worker. He has become widely known through his publication and through his connection with the Agricultural Extension work in New York State.

Lice on Cattle.

When lice appear on cows they should be a warning that you are too careless about the quarters of your animals. Go to work and clean up. Rake out all the trash and burn it; sprinkle dust around or slacked lime. Make one application of a good remedy such as Zenoleum. This will kill the living lice, but eggs or small lice will be living in the trash about the stall or straw where the cows lie, and will soon renew the colony of lice unless the whole condition of their surroundings is changed radically. That is why you should make a clean sweep of it.

The surest cure is always one like the Zenoleum recommended. Help it along in cleaning up as suggested. Few farmers appreciate the amount of damage these parasites do on animals. Comfort is the keynote of flesh or milk-making with beef-cattle, cows and hogs, and especially with young calves. If they are disturbed and irritated constantly with itching and scratching they lose the rest, which is the secret of success, both in putting on flesh and making milk.

Agricultural Chemicals and Fertilizers.

The market continues firm and steady, with an upward tendency. Southern business is picking up, and prices are well maintained. Nitrates of soda remain strong and sulphates of ammonia are a little stiffer.

AMMONIATES.

Nitrate of soda, spot, per 100 lbs.....	\$2 05	a	\$2 10
Nitrate of soda, futures, per 100 lbs..	2 00	a	
Cottonseed meal, p. ton, c. i. f. N. Y..	27 00	a	28 00
Sulph. ammonia, spot	2 05	a	2 07½
Sulph. ammonia, shipment	2 05	a	2 07½
Dried blood, New York, low grades..	2 45	a	2 47½
Dried blood, Western, high grade,			
fine ground	2 57½a		2 60
Fish scrap, at New York	2 55	a	10
Tankage, per unit	2 57½	a	2 65 a 10

PHOSPHATES.

Acid phosphate, per unit	55	a	60
Bone black, spot, per ton	16 00	a	17 00
Ground bone, per ton	21 00	a	23 50
S. C. phosphate rock, ground, per			
2,000 lbs	5 00	a	5 50
S. C. phosphate rock, undried, f. o. b.			
Ashley River, 2,400 lbs.....	3 00	a	3 25
do do dried.....	3 25	a	3 50
Florida, high grade phosphate rock,			
f. o. b. Fernandina, per ton.....	6 50	a	7 00
Florida land pebble phosphate rock,			
f. o. b. Fernandina, per ton.....	4 00	a	4 50
Tennessee phosphate, f. o. b. Mt.			
Pleasant, domestic	3 25	a	3 50
do do foreign.....	3 75	a	4 00

POTASH.

Kainit, future shipment, per ton	9 05	a	
Keiseret, future shipment, per ton....	7 35	a	7 50
Mur. potash, 80 p. c., future shipm't.	1 80	a	
Double manure salt (48 a 49 p. c. less			
than 2½ p. c. chlorine), shipment,			
per lb	1 09	a	...
			Basis 48 p. c.
High grade manure salt (90 a 93 p. c.			
sulphate potash), shipment.....	2 08	a	
			Basis 90 p. c.
Manure salt, in bulk, 20 p. c. per unit,			
O. P.....	62	a	64

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